***Fig.1***

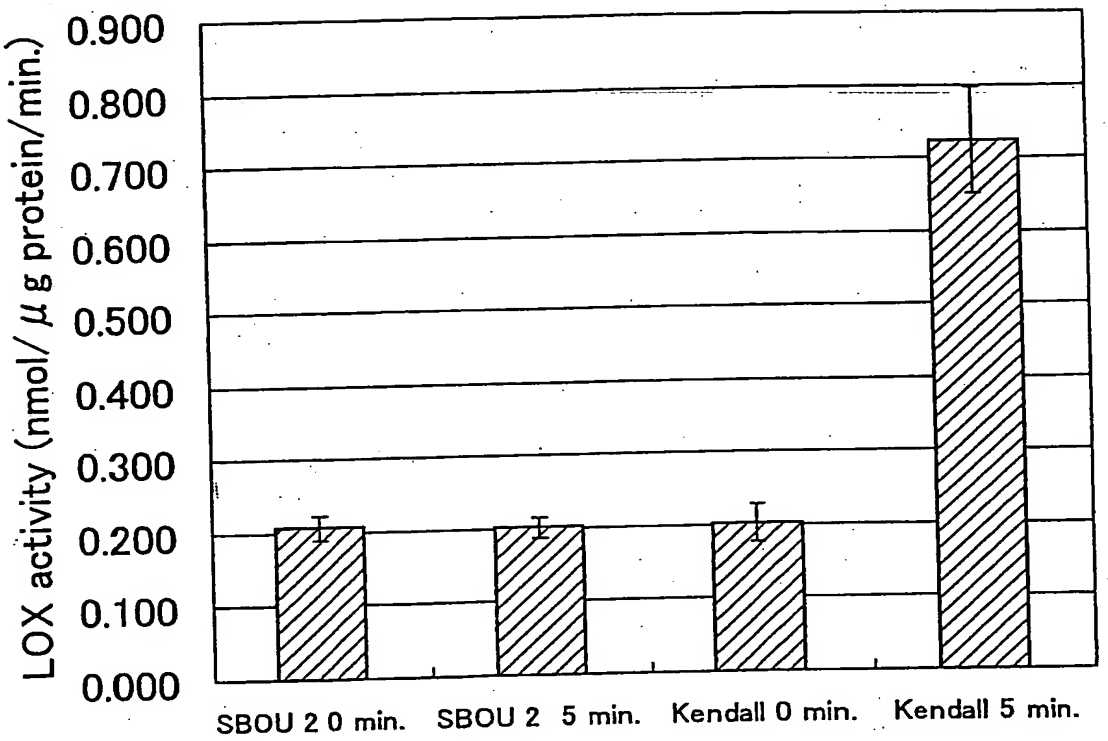

LOX activity (nmol/μg protein/min.)
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
SBOU 2 0 min.
SBOU 2 5 min.
Kendall 0 min.
Kendall 5 min.

*Fig.2*

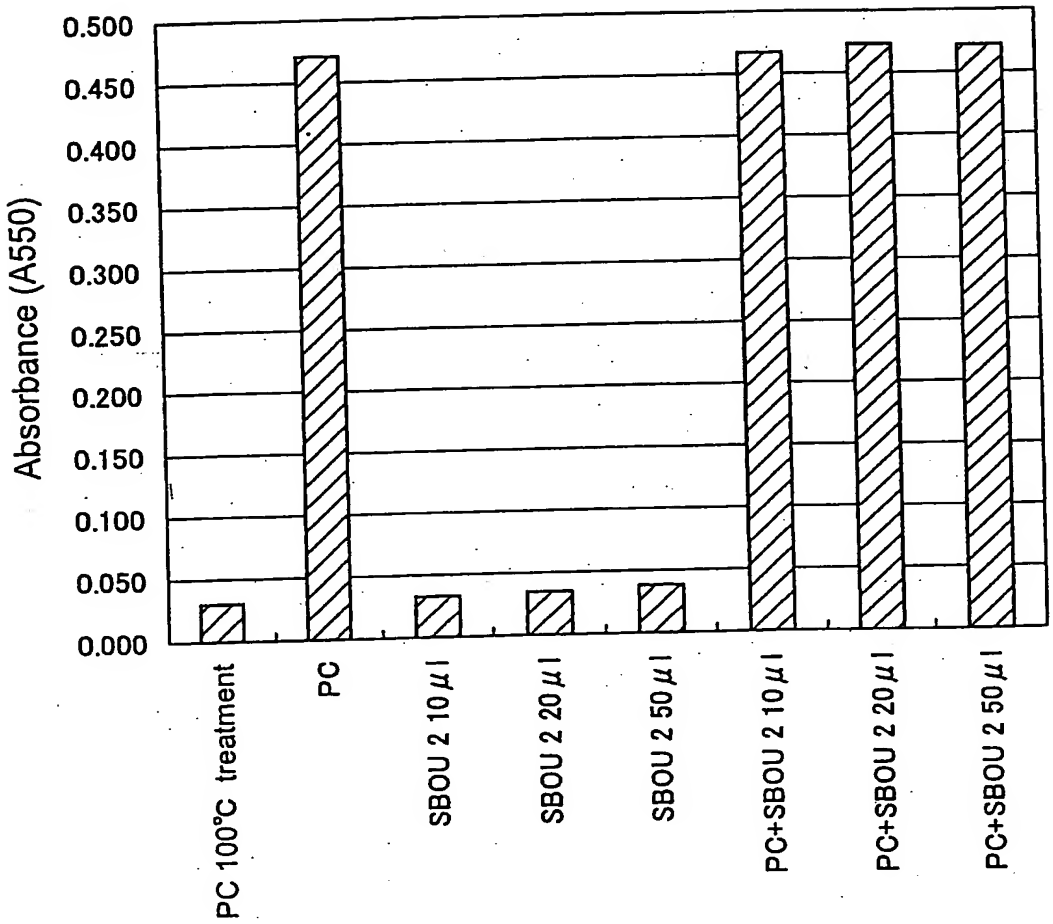

Absorbance (A550)
0.500
0.450
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
PC 100℃ treatment
PC
SBOU 2 10 μl
SBOU 2 20 μl
SBOU 2 50 μl
PC+SBOU 2 10 μl
PC+SBOU 2 20 μl
PC+SBOU 2 50 μl

*Fig.3*

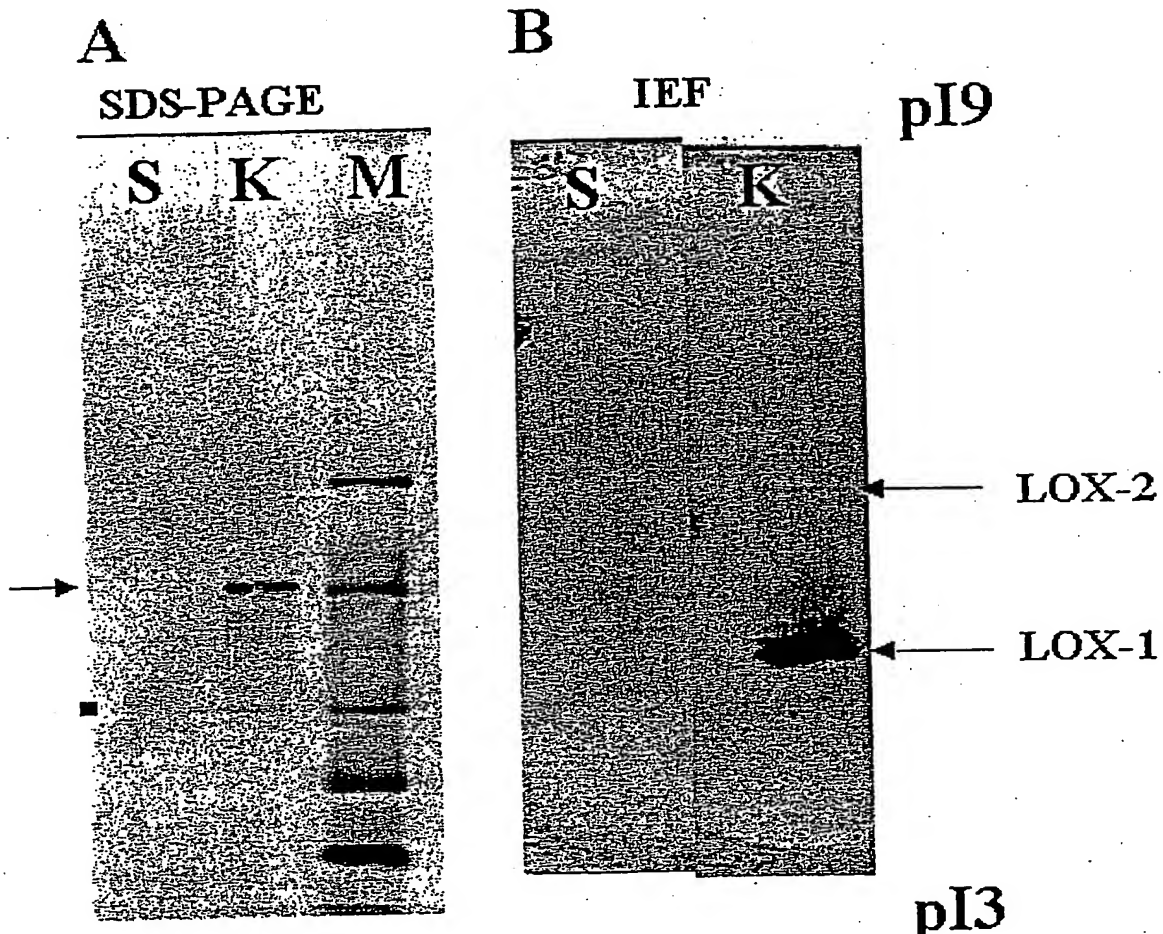

A
SDS-PAGE
S K M
B
IEF
pI9
S K
LOX-2
LOX-1
pI3
M:marker,
K: Kendall
S: SBOU 2
→: LOX,
57 Kd Band
S:SBOU 2
K:Kendall

*Fig.4*

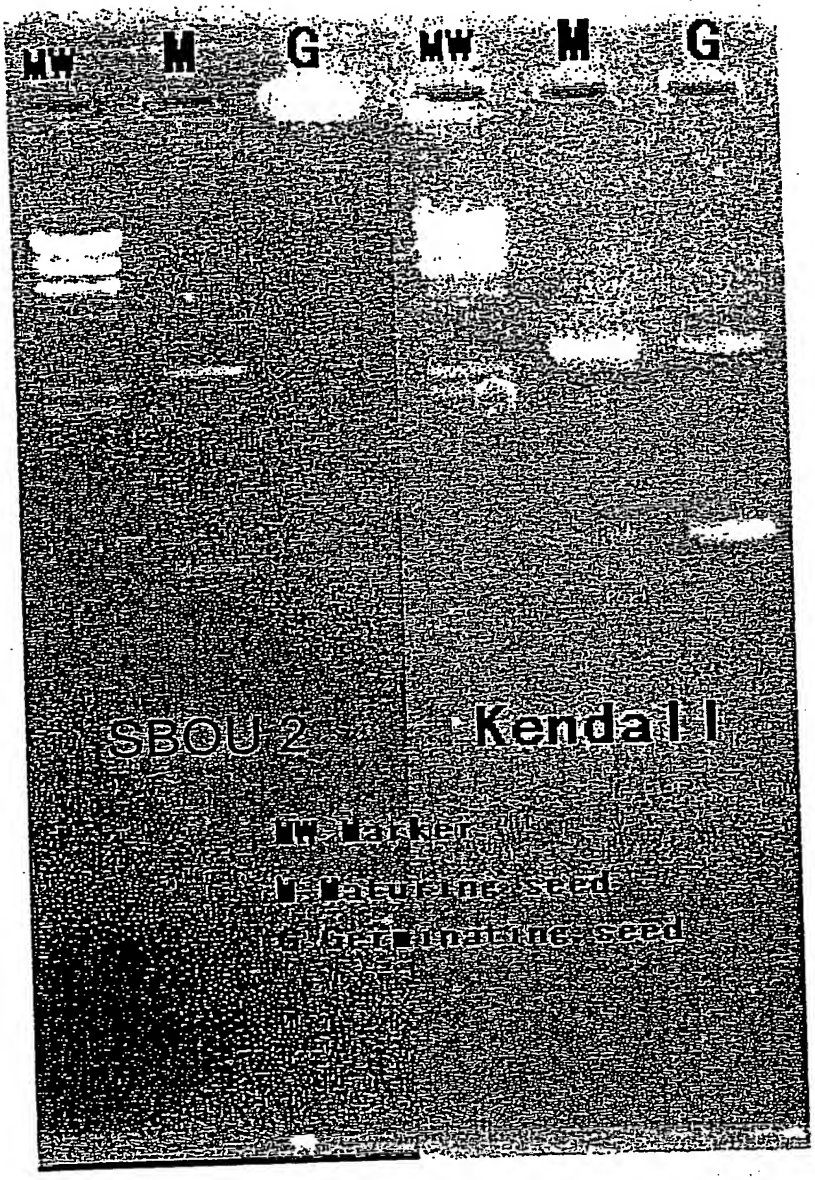
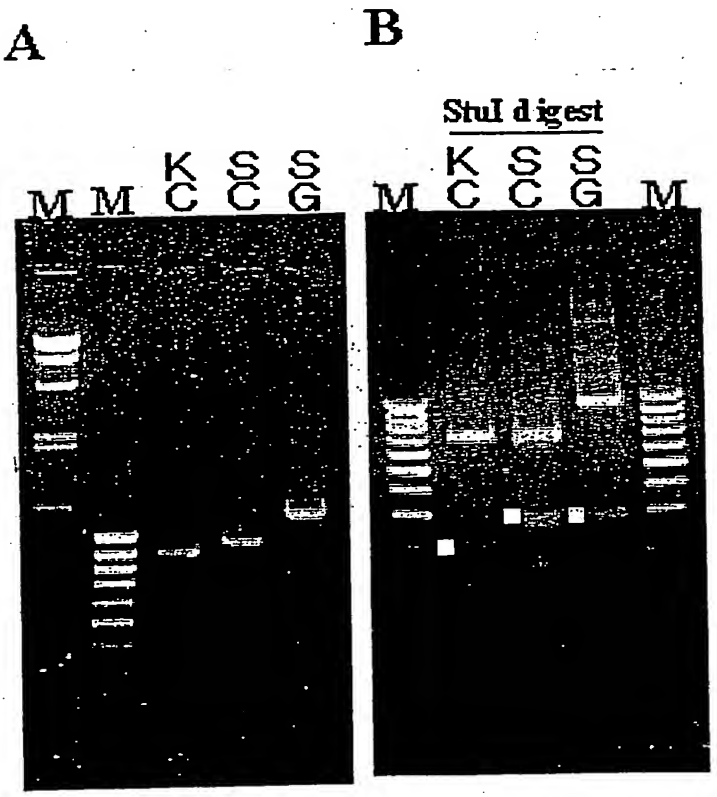

MW
M
G
MW
M
G
SBOU 2
Kendall
MW Marker
M Maturing seed
G Germinating seed

*Fig.5*




Nucleotide sequences of LOX-1 gene, the regions of 5th intron splicing donor site

**Fig.6**




M: Marker,
KC: Kendall cDNA template
SC: SBOU 2 cDNA template
SG: SBOU 2 genomicDNA template

*Fig.7*

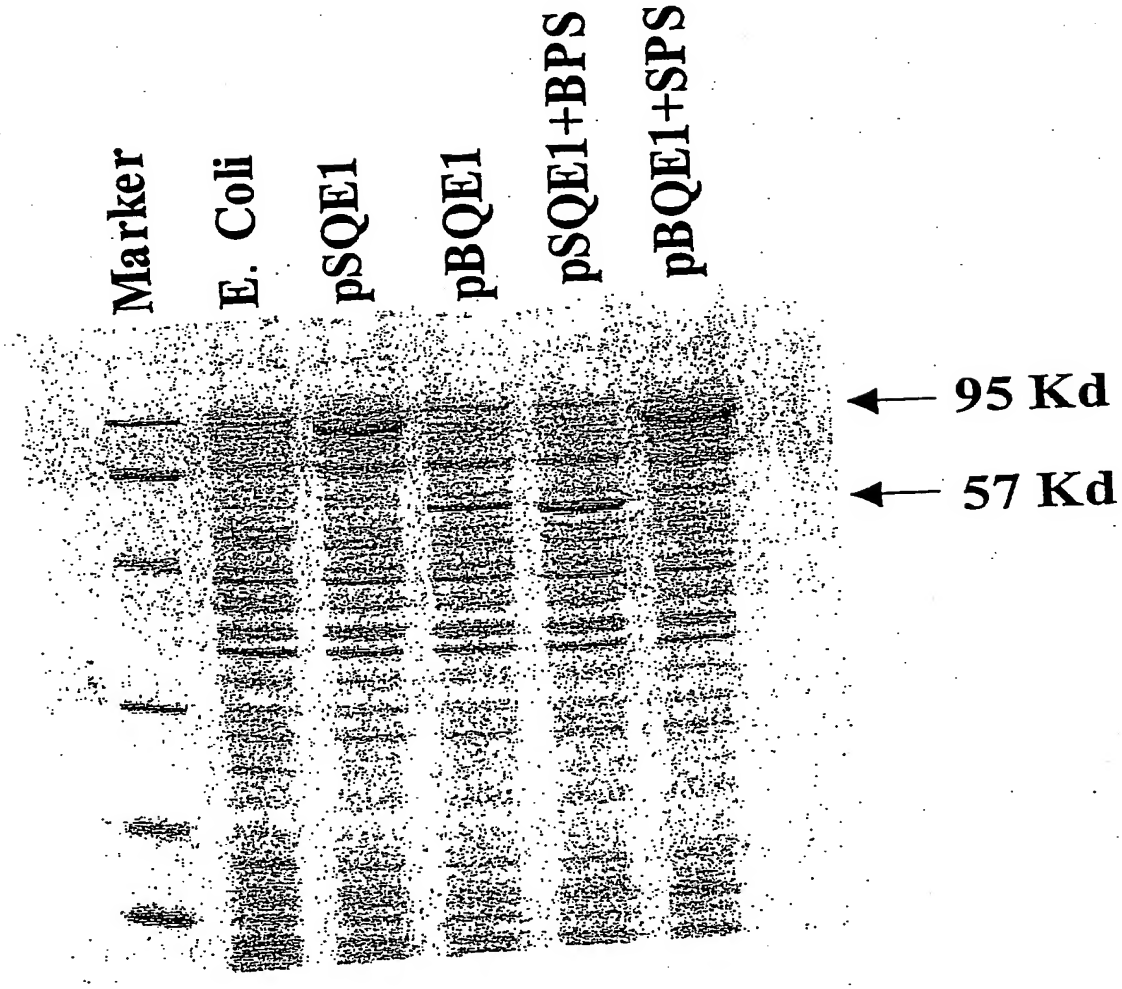


***Fig.8***

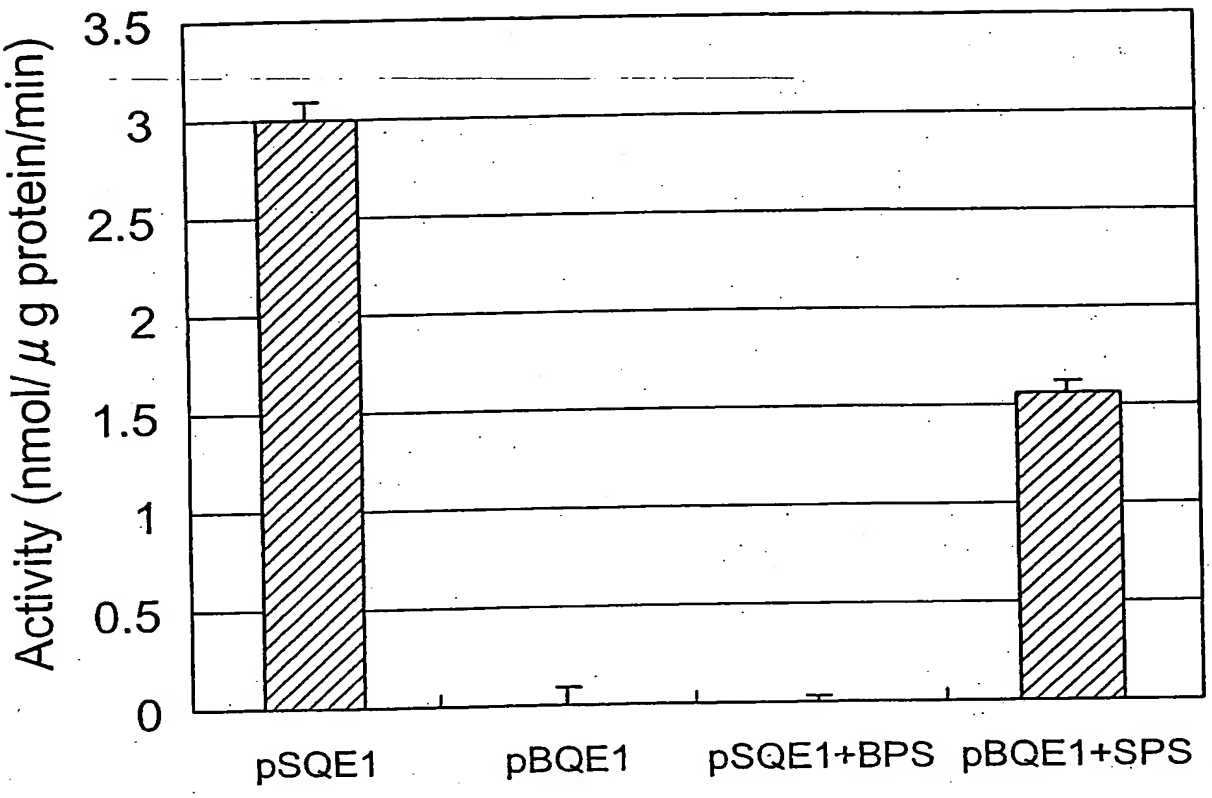
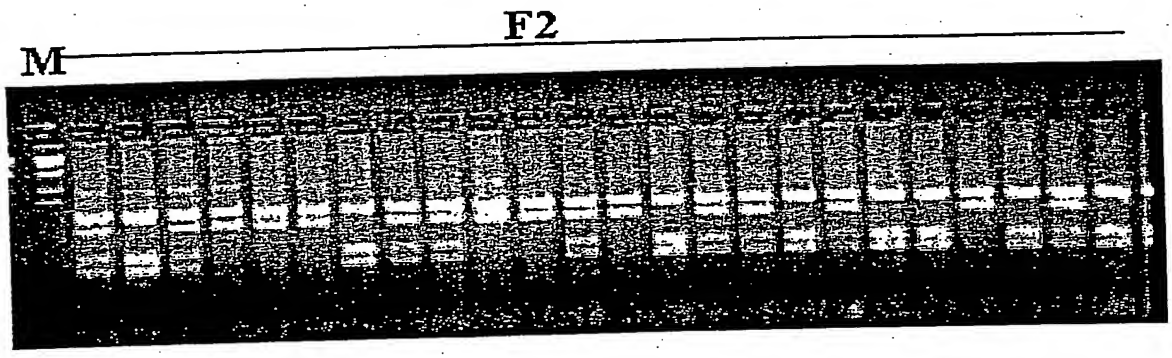

Activity (nmol/μg protein/min)
3.5
3
2.5
2
1.5
1
0.5
0
pSQE1
pBQE1
pSQE1+BPS
pBQE1+SPS

*Fig.9*




M:Marker
F2:Kendall x SBOU 2 F2 DNA AfaI method analysis

# Fig.10

| F2 individual No. | LOX activity | Afal method CAPS | JBC970 サザン |
|---|---|---|---|
| 1 | + | KB | KB |
| 2 | + | KK | KK |
| 3 | + | KB | KB |
| 4 | − | BB | KB |
| 5 | − | BB | BB |
| 6 | − | BB | BB |
| 7 | + | KK | KK |
| 8 | + | KB | KB |
| 9 | + | KB | KB |
| 10 | − | BB | BB |
| 11 | − | BB | KB |
| 12 | + | KB | KB |
| 13 | − | BB | BB |
| 14 | + | KK | KK |
| 15 | + | KB | KB |
| 16 | + | KB | KB |
| 17 | + | KK | KK |
| 18 | + | KB | KB |
| 19 | + | KK | KK |
| 20 | + | KK | KK |
| 21 | − | BB | KB |
| 22 | + | KK | KK |
| 23 | + | KB | KB |
| 24 | + | KK | KK |
| 25 | + | KB | KB |
| 26 | + | KB | KB |
| 27 | + | KK | KK |
| 28 | + | KK | KK |
| 29 | + | KK | KK |
| 30 | + | KB | KB |
| 31 | + | KB | KB |
| 32 | − | BB | KB |
| 33 | + | KB | KB |
| 34 | + | KB | KB |
| 35 | + | KK | KB |
| 36 | + | KB | KB |
| 37 | + | KB | KB |
| 38 | + | KK | KK |
| 39 | + | KB | - |
| 40 | + | KB | - |
| 41 | − | BB | BB |
| 42 | + | KB | KB |
| 43 | + | KK | KK |
| 44 | + | KB | KB |
| 45 | − | BB | BB |
| 46 | + | KK | KK |
| 47 | − | BB | BB |
| 48 | + | KK | KB |
| 49 | + | KB | KB |
| 50 | − | BB | BB |
| 51 | + | KB | KB |
| 52 | + | KB | KB |
| 53 | + | KK | KK |
| 54 | − | BB | BB |
| 55 | + | KK | KK |
| 56 | − | BB | BB |
| 57 | + | KB | KB |
| 58 | + | KB | KB |
| 59 | − | BB | BB |
| 60 | − | BB | BB |
| 61 | + | KK | KK |
| 62 | + | KK | KK |
| 63 | + | KK | KK |
| 64 | + | KB | KB |
| 65 | + | KB | KB |
| 66 | + | KK | KK |
| 67 | + | KB | KB |
| 68 | + | KK | KK |
| 69 | + | KB | KB |
| 70 | − | BB | BB |
| 71 | + | KB | KB |
| 72 | − | BB | BB |
| 73 | + | KB | KB |
| 74 | + | KB | KB |
| 75 | + | KK | KK |
| 76 | + | KB | KB |
| 77 | + | KK | KK |
| 78 | − | BB | BB |
| 79 | + | KB | KB |
| 80 | − | BB | BB |
| 81 | − | BB | BB |
| 82 | + | KB | KB |
| 83 | + | KK | KK |
| 84 | + | KK | KK |
| 85 | − | BB | BB |
| 86 | − | BB | BB |
| 87 | − | BB | BB |
| 88 | + | KB | KB |
| 89 | − | BB | BB |
| 90 | − | BB | BB |
| 91 | + | KK | KK |
| 92 | + | KB | KB |
| 93 | + | KB | KB |
| 94 | + | KK | KK |
| 95 | + | KB | KB |
| 96 | + | KB | KB |
| 97 | + | KK | KK |
| 98 | + | KB | KB |
| 99 | + | KB | KB |
| 100 | + | KB | KB |
| 101 | − | BB | BB |
| 102 | + | KB | KK |
| 103 | + | KB | KB |
| 104 | + | KB | KB |
| 105 | + | KB | KB |
| 106 | + | KK | KK |
| 107 | + | KK | KK |
| 108 | + | KK | KK |
| 109 | + | KB | KB |
| 110 | − | BB | BB |
| 111 | − | BB | BB |
| 112 | + | KB | KB |
| 113 | + | KB | KB |
| 114 | + | KB | KB |
| 115 | − | BB | BB |
| 116 | + | KB | KB |
| 117 | − | BB | BB |
| 118 | + | KK | KK |
| 119 | + | KB | KB |
| 120 | + | KK | KK |
| 121 | + | KB | KB |
| 122 | + | KB | KB |
| 123 | + | KK | KK |
| 124 | + | KB | KB |
| 125 | − | BB | BB |
| 126 | + | KK | KK |
| 127 | + | KB | KB |
| 128 | + | KB | BB |
| 129 | + | KB | KB |
| 130 | + | KB | KB |
| 131 | + | KK | KB |
| 132 | + | KK | KK |
| 133 | − | BB | BB |
| 134 | − | BB | BB |
| 135 | + | KK | KK |
| 136 | + | KB | KB |
| 137 | + | KB | KK |
| 138 | + | KB | KB |
| 139 | − | BB | BB |
| 140 | + | KK | KK |
| 141 | + | KB | KB |
| 142 | + | KB | BB |
| 143 | + | KK | KK |
| 144 | + | KB | KB |

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*Fig.11*

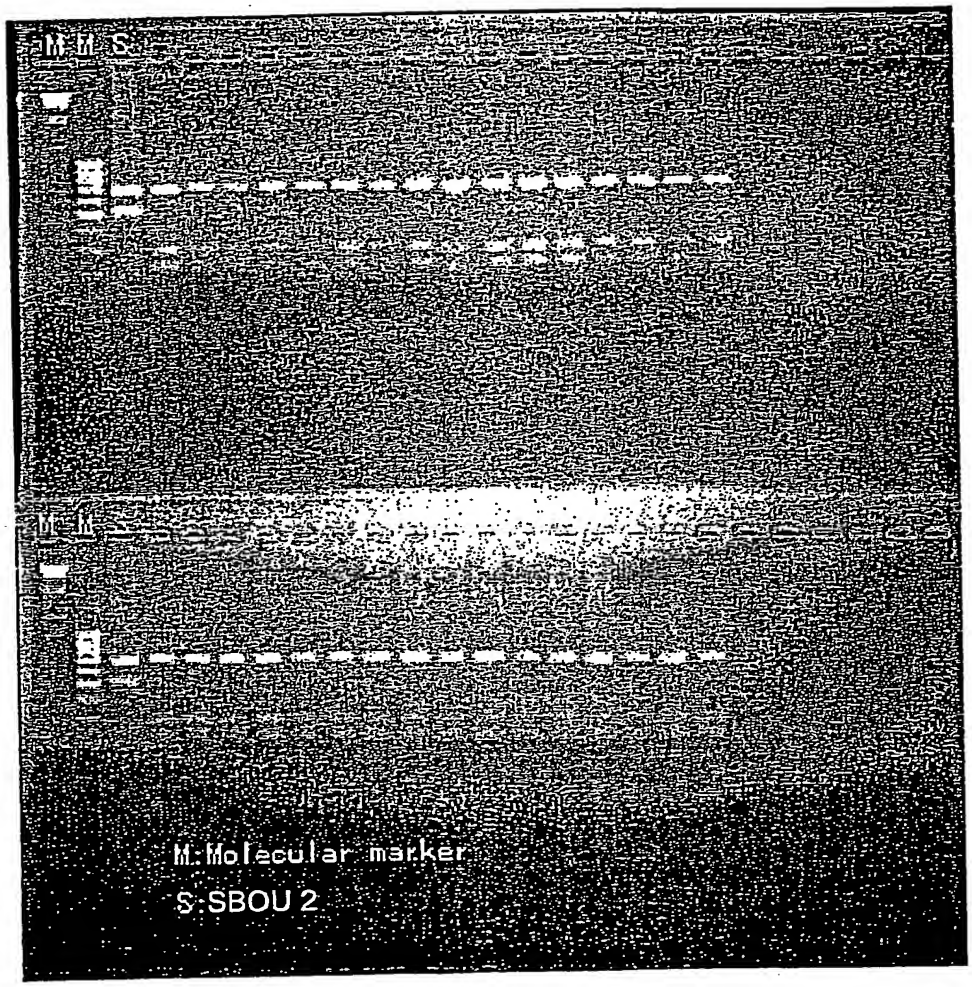
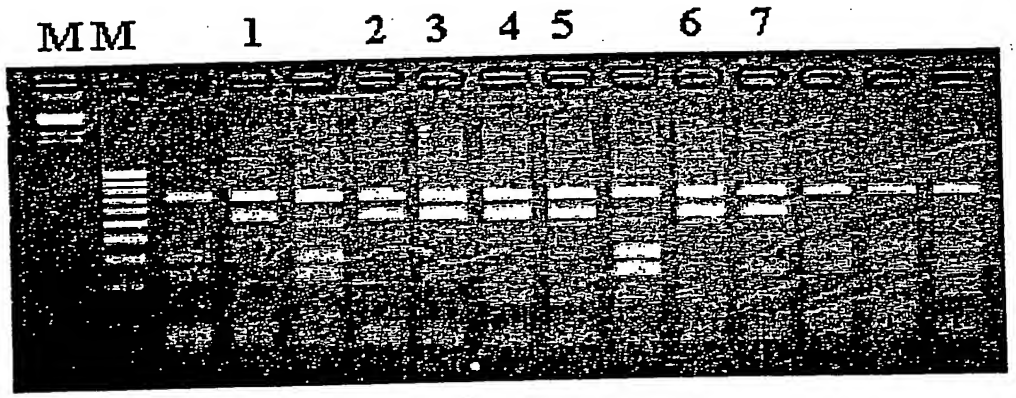


*Fig.12*




M: Marker,
1 and 5:SBOU2、 2:SBOU 5、 3:SBOU 6
4:SBOU 1、 6:SBOU 3、 7:SBOU 4

Fig.13A

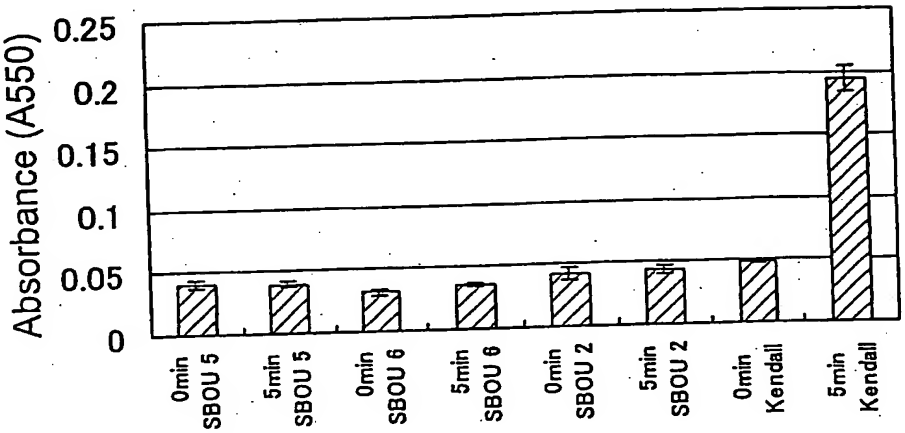
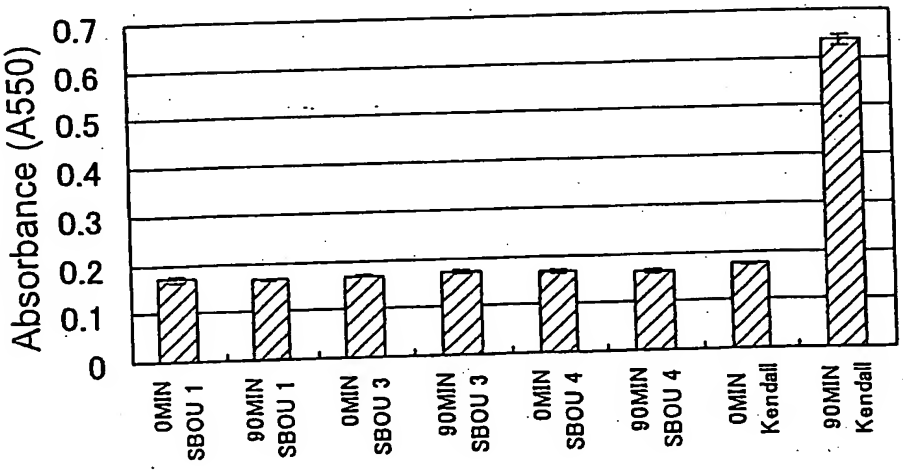



Fig.13B



# Fig.14

| Variety | LOX+F4 | LOX-F4 |
|---|---|---|
| Barley moisture content (%) | 10.9 | 11 |
| Barley weight (g) | 3000 | 3000 |
| Steeping (%) | 44.8 | 44.5 |
| Steeping time (h) | 82 | 82 |
| Malt yield weight (g) | 2571.6 | 2572.2 |
| Malt yield percent (%ad) | 85.7 | 85.7 |
| Malt yield percent (%db) | 90.3 | 90.7 |
| Moisture content (%) | 6.1 | 5.8 |
| Mashing time (min) | 9-15 | 9-15 |
| Lautering speed (min) | 8 | 17 |
| Transparency | 2 | 2 |
| Color (EBC) | 2.1 | 2.2 |
| Boiling color (EBC) | 3.2 | 3.3 |
| Air-dried extract (%) | 67 | 69.3 |
| Anhydrous extract (%) | 71.4 | 73.5 |
| TN (%) | 2.49 | 2.291 |
| SN (%) | 0.648 | 0.645 |
| Crude protein (%) | 15.6 | 14.3 |
| KZ | 26 | 28.1 |
| EVG (%) | 78.8 | 79 |
| DP (°WK) | 348 | 377 |
| DP (WK/TN) | 140 | 165 |
| Viscosity (mPa·s) | 1.87 | 1.89 |
| $\beta$ -glucan (mg/l) | 427 | 392 |
| pH | 5.97 | 6 |
| Extract yield (%) | 64.5 | 66.7 |

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15/15

***Fig.15***